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6 HAZARDS OF VISION

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Final Report
September 1, 1975 - November 30, 1978

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HAZARDS OF VISION

John Lott Brown
Principal Investigator

Final Report
September 1, 1975 - November 30, 1978

Summary:

This is the final report for ONR sponsored research on the human visual system as an information channel. The research included studies of the fundamental characteristics of the system which relate to its function and information processing, hazards which may influence the function of this system, significant dimensions of visual stimulation and their relevance in visual communication as well as techniques for measurement of normal and defective vision. The areas of research included conditions of adaptation and illumination; reactions to chemical agents in vision; spatial, temporal and chromatic dimensions in visual perception and various interactions between the functions of the system and environmental conditions. Investigations included psychophysical studies with human observers, behavioral studies with animals and electrophysiological studies in animals.

The details have been reported in the annual reports and the reports listed below.

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Reports:

- Blick, D.W. and Chapman, R.M. Changes in visually evoked cortical potentials due to methylmercury intoxication. J. Opt. Soc. Am., 1978, 68, 1420.
- Bowker, D.O. and Sharpe, L.T. Size comparisons of rotated gratings. Invest. Ophthalmol. & Vis. Sci., Suppl. 1978, 221.
- Brown, J.L. Visual elements in flight simulation. National Acad. of Sciences, National Research Council publication, 1975.
- Brown, J.L. Third Symposium of the International Research Group on Colour Vision Deficiencies. Color Research and Application, 1976, 1, 108-112.
- Brown, J.L. Visual elements in flight simulation. Aviation Space and Environmental Medicine, 1976, 47, 913-924.
- Brown, J.L. and Black, J.E. Critical duration for resolution of acuity targets. Vision Res., 1976, 16, 309-315.
- Brown, J.L. and Kortela, I.M. A facilitation effect in orientation discrimination. Technical Report #76-2, Center for Visual Science, University of Rochester, 1976.
- Brown, J.L. Light and photometry. Technical Report #77-1. Center for Visual Science, University of Rochester, 1977.
- Brown, J.L. Adaptation. Technical Report #77-2. Center for Visual Science, University of Rochester, 1977.
- Brown, J.L. Visual acuity and form discrimination. Technical Report #77-3. Center for Visual Science, University of Rochester, 1977.
- Brown, J.L. The temporal characteristics of the visual system. Technical Report #77-4. Center for Visual Science, University of Rochester, 1977.
- Brown, J.L. Orientation Discrimination. Vision: 1977. A dedicatory Symposium for the College of Optometry, University of Houston, March 28-31, 1977, pg. 43. (Complete account to be published by Springer-Verlag).
- Brown, J.L. Sensory Systems. The Physiological Basis of Medical Practice, 10th Edition. Williams & Wilkins, 1978.
- Brown, J.L. and Kortela, I.M. Orientation discrimination. In: Cool, S.J. and Smith, E.L. III (Eds.), Frontiers in Visual Science. Springer-Verlag, Berlin, 1978.
- Brown, J.L. and Kortela, I.M. A facilitation effect in orientation discrimination. Vision Res., 1978, 18, 1239-1246.
- Citron, M.C. A spatiotemporal comparison of cortical and LGN responses in the cat. Technical Report #76-4. Center for Visual Science, University of Rochester, 1976.

- Citron, M.C. A spatiotemporal comparison of cortical and lateral geniculate receptive fields in cat. Doctoral Dissertation, University of Rochester, 1977.
- Citron, M.C. and Emerson, R.C. A spatiotemporal comparison of cortical and lateral geniculate responses in cat. Invest. Ophthalmol. & Vis. Sci., Suppl. 1977, 79.
- Garman, R.H., Reed, L. and Blick, D.W. Toxic epidermal necrolysis in a monkey (*M. fascicularis*). Vet. Pathol., 1979, 16, 81-88.
- Ide, L.S. and Emerson, R.C. Units in the cat's dorsal lateral geniculate nucleus with response properties between those of typical X and Y units. Invest. Ophthalmol. & Vis. Sci., Suppl. 1978, 150.
- Kortela, I.M. Low-luminance spatial and temporal interactions using orientation thresholds for two spot stimuli. Master's Thesis, University of Rochester, May, 1975.
- Levitt, F.B., Emerson, R.C. and Brown, J.L. Quantitative examination of effects of strobe-rearing on striate receptive fields in the cat. Invest. Ophthalmol. & Vis. Sci., Suppl. 1977, 139.
- Montellese, S., Brown, J.L. and Sharpe, L.T. Changes in critical duration during dark adaptation. Invest. Ophthalmol. & Vis. Sci., Suppl. 1978, 154.
- Montellese, S., Sharpe, L.T. and Brown, J.L. Changes in critical duration during rod-isolated dark adaptation. Invest. Ophthalmol. & Vis. Sci., Suppl. 1979, 172.
- Montellese, S., Sharpe, L.T. and Brown, J.L. Changes in critical duration during dark adaptation. Vision Res., in press.
- Nelson, D. Center-surround interaction in X and Y cells in the lateral geniculate nucleus of the cat as a function of adaptation. Technical Report #75-2, Center for Visual Science, University of Rochester, 1975.
- Pasternak, T. Spatial resolution and motion detection in stroboscopically reared cats. Eleventh Symp. of the Center for Visual Science, Univ. of Rochester, 1978.
- Pasternak, T., Merigan, W.H. and Brown, J.L. Vision of cats reared in stroboscopic illumination. Abst. Vol. III., Soc. for Neuroscience, Annual Meeting, 1977, p. 572.
- Pasternak, T., Merigan, W.H. and Brown, J.L. Strobe rearing reduces sensitivity to slow motion. Soc. for Neuroscience Annual Meeting, 1978.
- Pasternak, T., Merigan, W.H. and Dardano, R.N. Jr. Movement discrimination in strobe-reared cats: Direction of motion. Invest. Ophthalmol. & Vis. Sci., Suppl. 1979, 148.
- Sarmiento, R.F. The stereoacuity of the macaque monkey. Vision Res., 1975, 15, 493-498.

- 5 -

Winson-George, S. Review of color deficiency and its measurement.
Technical Report #77-5. Center for Visual Science, University of
Rochester, 1977.

Winson-George, S. Review of color deficiency and its measurement.
Technical Report #77-5. Center for Visual Science, University of
Rochester, 1977.